U.S. ENVIRONMENTAL PROTECTION AGENCY
SPECIAL SITE ASSESSMENT REPORT

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region IV
Superfund Division
Emergency Response and Removal Branch

Francis Street Site Assessment
Waycross, Ware County, Georgia

Prepared by
Matthew J. Huyser
On-Scene Coordinator

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1.0 INTRODUCTION

Site Number: N/A
Response Authority: CERCLA
Response Type: Time-Critical
Response Lead: EPA
Incident Category: Removal Assessment
NPL Status: Non NPL

Much of the following information was provided in a Seven Out Tank Site Special Pollution Report ("POLREP") dated September 19, 2013 (Attachment 1). The site description and removal site evaluation information is repeated in this report to provide a complete narrative of the completion of the Seven Out Tank Site removal action and the work done under the Francis Street Site Assessment.

1.1. SITE DESCRIPTION

1.1.1. SEVEN OUT TANK SITE

The Seven Out facility (the "Site") was an industrial wastewater treatment plant in Waycross, Ware County, Georgia, that operated from 2002 to 2004. The Site consists of a tank farm, an abandoned office building, and a small warehouse. The tank farm had 37 tanks ranging in volume of 8,000 gallons to 44,000 gallons, and a combined capacity of approximately 400,000 gallons. It is approximately one-half acre and is made of a concrete floor with a short concrete containment berm. South of the containment area is an office building of about 3,000 square feet. Around the south and east sides of the office building is a fenced lot that contains the warehouse of about 4,500 square feet. The warehouse contained several drums, totes, and dry bags of material.

When the facility operated, treated wastewater was discharged to the City of Waycross publicly owned treatment works (POTW) using the City's collection system. Precipitated solids were treated in a filter press, and then transported off-Site for disposal at a landfill. The treatment process was generally unsuccessful and effluents regularly exceeded requirements of the company's pre-treatment discharge permit. The Seven Out facility received several Notices of Violation and an Administrative Order from the City of Waycross. On March 1, 2004, the City of Waycross disconnected the facility's connection to the POTW. The facility discontinued processing wastewaters, although it still received shipments. Incoming wastewaters were stored in tanks on-Site as well as four rented portable tanks that were placed on an adjoining property. Shortly thereafter and since that time, the facility ceased all operations without discharging the remaining waste in storage. Georgia Environmental Protection Division (GAEPD) determined the facility to be incorrectly storing hazardous wastes and out of compliance with State of Georgia regulations.

GAEPD referred the Site to the U.S. Environmental Protection Agency (EPA) Region 4 (R4) Emergency Response and Removal Branch (ERRB) for a Removal Site Evaluation (RSE). From August 23-26, 2004, EPA collected samples from onsite storage and treatment tanks. Because discolored soil was observed in some areas, soil samples were collected from a drainage ditch near the containment

area, an area adjacent to frac tanks[1] that had been stored outside the containment area, and along the south wall of the containment area. An emergency action was initiated by EPA on January 27, 2005 following a request for assistance from GAEPD on January 21, 2005. Under the emergency response action, pumpable liquids in the tanks and standing water in the secondary containment area were removed to mitigate the threat of release.

From August 28 - September 1, 2006, GAEPD collected samples from the Site and the surrounding area as part of a remedial Site Inspection (SI) (Ref. 3). Their findings were submitted to EPA's Superfund Site Assessment Section on November 20, 2006 where it was determined that the Site did not qualify for further remedial site assessment due to lack of releases and targets for groundwater, surface water, and soil pathways.

After the 2005 emergency response, significant quantities of liquid and solid waste remained at the Site. An administrative order was signed on July 30, 2008, between EPA and Respondents, consisting of several generators that sent waste to the facility, to conduct a time-critical removal action to remove all remaining waste materials from the Site. The work to be performed under the order included:

- Implementation of the OSC-approved removal action in accordance with the schedule and requirements of a Removal Action Work Plan;
- Removal of waste material from all tanks, drums, and other containers on the Site, as well as from the secondary containment area;
- Decontamination and/or disposal of all tanks, drums, and other containers on the Site, as well as decontamination of the secondary containment area; and,
- Disposal of the waste material removed from the Site, including any sampling and analysis necessary to determine proper treatment and disposal methods.

EPA conducted oversight of all removal activities, including collection of split-samples from several tanks. Over the course of the removal action, a total of 300,000 gallons of rainwater was discharged to the Waycross POTW, 905 tons of nonhazardous solid wastes were sent to an off-site landfill for disposal, and 3,900 gallons plus 108 tons of hazardous wastes (HW codes D002, D006, D007, and D018) were sent off-site for treatment and disposal. When the work was concluded and a final report was received, EPA issued the notice of completion letter on November 16, 2009.

1.1.1.1. *SEVEN OUT TANK SITE LOCATION*

The Site includes an office building, storage building, tank farm, and paved parking areas. The tank farm is not fenced and is accessible to the public via Folks Street, Francis Street, or McDonald Street. The property is immediately surrounded by commercial buildings to the east, west, and north with a major CSX Railroad terminal to the south. A lot to the south was previously used for staging mobile tanks that the facility used to store untreated waste water. The nearest residential property is located at 103 Folks Street approximately 220 feet from the tank farm area; nearby residential neighborhoods are located to the west and north.

[1] "Frac Tank" is an industry term for a category of temporary mobile tanks used for storage of water and other liquids

The Site lies in an area of minimal flooding outside of both the 100-year and 500-year flood zones. Rainfall on the Site drains into a ditch between the tank farm and a railroad line; this ditch flows west roughly parallel to the railroad line for approximately 1200 feet and discharges into an unnamed creek. Just south of the ditch is a petroleum facility, C & M Oil Company, which also discharges overland runoff to the drainage ditch. Immediately south of this intersection is a former BP fuel tank farm, which also discharges overland runoff to the unnamed creek. The creek flows northeast for approximately 5000 feet, flowing through Mary Street Park and underground through the city center after which it emerges at Lee Avenue and Memorial Drive (Hwy 23). Water then flows east for less than 1000 feet then joins the Waycross City Drainage Canal the PPE. The City Drainage Canal flows in a northeast direction for approximately 3 miles before joining the Satilla River.

1.1.2. FRANCIS STREET SITE ASSESSMENT

In August of 2013, EPA was contacted by residents of Waycross, Georgia, regarding health problems experienced by occupants of homes surrounding Mary Street Park (also known as "Folks Park") and the potential relationship of these symptoms to contaminants originating from the Seven Out Tank Site. Information and concerns from the community are being posted and documented at a website (www.silentdisaster.org) as well as an accompanying facebook group page.

The community group has documented complaints from individuals at residences surrounding Mary Street Park, as well as from members of a church at the perimeter of the park. The group has also documented complaints from employees of a bank and the Waycross City Hall which are located over or near the underground unnamed creek. Reported health problems include the following:

- Tumors or "masses" (both benign and malignant)
- Cancer
- Respiratory problems
- Neurological problems
- Headaches
- Shaking or tremors
- Fatigue
- Vision and hearing trouble
- Sores

The community group has also documented unidentifiable sheen(s) emanating from lawns around Mary Street Park and within the unnamed creek through the park. The sheen is observed on pavement and surface water after rain events and a "dry white substance" is deposited when the sheen has dried. Additional concerns include the deterioration and death of trees in Mary Street Park and deformation of amphibians in the unnamed creek within the park.

The community group collected a sediment sample[2] from the unnamed creek in Mary Street Park on July 3, 2013, and sent the sample to an environmental analytical laboratory for analysis[3]. The laboratory returned a report[4] with detections of Polycyclic Aromatic Hydrocarbons (PAHs) (also known as "Poly-Aromatic Hydrocarbons" or "Polynuclear Aromatic Hydrocarbons") including Benz(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Fluoranthrene, Phenanthrene, and Pyrene. These constituents correspond to a list of PAHs detected in a soil sample collected by EPA during a RSE on August 26, 2004 (Ref. 10) at the Seven Out Tank Site (Table 1).

Due to the proximity of the Site to the Mary Street Park residences, the stormwater drainage flow from the Site to the unnamed creek, and the reported detections of PAHs in the unnamed creek sediments at the park, the community group believes that contamination originating from the Seven Out Tank Site may be the cause of local health and environmental problems that they have observed.

1.2. FRANCIS STREET SITE ASSESSMENT - PRELIMINARY REMOVAL ASSESSMENT/REMOVAL SITE INSPECTION RESULTS

1.2.1. INITIAL SITE VISIT

EPA On-Scene Coordinator (OSC) Matthew Huyser visited the Site on September 5, 2013 and observed that no visible significant changes had occurred at the facility since the removal action had been completed in 2009. Thick vegetation had grown outside the south border of the tank farm and has reached heights in excess of 10 feet. Standing water was observed on the east side of the property both inside and outside the containment area; the inability of the Site to fully shed rainwater is consistent with observations made during the 2008-2009 removal action. This behavior is likely due to an intentional design that would help keep liquids on-site in the event of a spill.

Also on September 5, OSC Huyser met with representatives of the community group and observed the areas in the unnamed creek and the residential yards where sheens had been observed and photographed. A light sheen of approximately 5 square centimeters was observed between vegetation within the creek flowing through Mary Street Park; this sheen presented characteristics perceptibly consistent with a hydrocarbon source as opposed to a discharge from a bacterial or other localized organic source. The sheen and/or residue on paved surfaces that had been reported from residential yards after rain events were not visible on September 5. Another area observed was near a culvert where the drainage ditch at the southern border of the Site passed under S Nicholls Street; concerns of dying or absent vegetation were pointed out in an area at the northwest corner of a property owned by CSX Railroad. The final area observed was at the intersection of the unnamed creek and Margaret Street, approximately 2500 feet upstream from Mary Street Park and 1000 feet upstream from the confluence with the drainage ditch that passes the southern border of the Seven Out Tank Site. Concerns of previously observed sheens and

[2] This sample and the laboratory analysis that was obtained is useful for comparative purposes only. The sample was not collected under any sampling and analysis plan or a quality assurance project plan and therefore the results cannot be validated for decision-making purposes.

[3] Ana-Lab Corp., Kilgore, TX

[4] Ana-Lab Corp. *Report of Soil Sample Results from Mary Street (Folks) Park, Waycross, GA, Project # 619468.* July 3, 2013.

light tan foam were pointed out; no sheen was visible on September 5 but light foam was observed collecting around debris in the creek.

1.2.2. INITIAL REVIEW OF AVAILABLE DATA

1.2.2.1. *REVIEW OF 2004 RSE DATA*

The analytical results from a sediment sample collected by the community group from the unnamed creek in Mary Street Park point to a presence of PAHs that correspond to a list of PAHs detected in a soil sample collected by EPA during a RSE on August 26, 2004 (Ref. 10) at the Seven Out Tank Site (See Table 1):

Table 1. Soil Samples Collected by EPA and by Community Group

	Source:	Soil Sample SO-SW Taken by EPA Near South Perimeter of Seven Out Site	Soil Sample SO-DD Taken by EPA Near Drainage Area of Seven Out Site	Sediment Sample Collected by Resident in Unnamed Creek at Mary Street Park
	Date:	Collected 8/26/2004	Collected 8/26/2004	Collected 7/3/2013
	Units:	mg/kg	mg/kg	mg/kg
Polynuclear Aromatic Hydrocarbons (PAHs)	Benz(a)anthracene	2.4	0.33 UJ	0.556
	Benzo(a)pyrene	2.8	0.33 U	ND
	Benzo(b)fluoranthene	1.8	0.33 U	0.827
	Benzo(k)fluoranthene	3.2	0.33 U	0.398
	Chrysene	3.1	0.330 UJ	0.671
	Dibenz[a,h]anthracene	0.65	0.33 U	ND
	Fluoranthrene	4.6	0.33 U	0.691
	Indeno[1,2,3-cd]pyrene	3	0.33 U	ND
	Phenanthrene	1.8	0.4	0.378
	Pyrene	4	0.330 UJ	1.52

Sample SO-SW was collected from discolored surface soils outside the containment area of the tank farm, near the mechanical sludge press at the southeast corner. Of the four samples collected during EPA's assessment, this was the only sample which showed detectable levels of PAHs. One of the samples which did not show detectable of PAHs was sample SO-DD, which was collected within the drainage path (but not in the drainage ditch) exiting the Site at the southeast corner. The two other soil samples were collected from discolored soils near the frac tanks at the south lot from the facility.

Although lead and arsenic were detected in samples SO-SW and SO-DD during the 2004 EPA RSE, neither exceeded generic RMLs for industrial soils (800 mg/kg for Lead and 240 mg/kg for Arsenic) (U.S. EPA, Region 4, 2013a) and neither was found within the contents of materials at the Site during the 2004 RSE or the 2008-2009 removal action (U.S. EPA, 2009; and Winter Environmental, 2009) to indicate a potential source of these metals. The metals were not identified as a contaminant of concern

for the removal action. The Toxicity Characteristic Leaching Procedure[5] (TCLP) lead concentration for sample SO-DD of 8.13 mg/L exceeded the regulatory disposal limit of 5 mg/L [40 CFR §261.24(b)] while the TCLP lead concentration for sample SO-SW was only 0.069 mg/L; this occurred despite the measurements that showed a total lead concentration in SO-DD of 17.7 mg/kg below the total lead concentration in SO-SW of 264 mg/kg. Typically, it would be anticipated that a higher concentration of total lead would result in a comparable increase in lead leachate concentration. No cause for this discrepancy is proposed in the 2004 Removal Assessment Report and it is unlikely that the cause can be determined from the available data.

1.2.2.2. *Discussion of Comparison Values: RSLs, RMLs, and PRGs*

The community's primary concern regarding EPA's samples relates to a comparison that was made in EPA's December 9, 2004 Removal Assessment Report in which the soil sample results are evaluated against to the EPA Region 9 Preliminary Remediation Goal (PRG) (Ref. 9) Residential Screening Levels (RSLs) and Industrial Screening Levels (ISLs) (See Table 2):

Table 2. Screening Levels used for Comparison in Removal Assessment Report

	Source:	R9 PRG RSLs for Residential Soil Use for Comparison in RSE Report	R9 PRG ISLs for Industrial Soil Used for Comparison in RSE Report	R9 PRGs for Residential Soils	R9 PRGs for Industrial Soils
	Date:	Referenced on 12/9/2004	Referenced on 12/9/2004	Distributed Oct, 2004	Distributed Oct, 2004
	Units:	mg/kg	mg/kg	mg/kg	mg/kg
Polynuclear Aromatic Hydrocarbons (PAHs)	Benz(a)anthracene	0.621	2.11	0.62	2.1
	Benzo(a)pyrene	0.0621	0.211	0.062	0.21
	Benzo(b)fluoranthene	0.621	2.11	0.62	2.1
	Benzo(k)fluoranthene (*California-Modified)	*0.378*	1.28	6.2 (*0.38)	21 (*1.3)
	Chrysene (*California-Modified)	3.78	12.8	62 (*3.8)	210 (*13)
	Dibenz[a,h]anthracene	0.0621	0.211	0.062	210
	Fluoranthrene	2290	22000	2300	22000
	Indeno[1,2,3-cd]pyrene	0.621	2.11	0.62	21
	Phenanthrene	NSA	NSA	NSA	NSA
	Pyrene	2320	29100	2300	29000

When compared to the Region 9 PRGs, sample SO-SW exceeds the industrial soil screening level for Benz(a)anthracene, Benzo(a)pyrene, Benzo(k)flouranthene, Dibenz[a,h]anthracene, and Indeno[1,2,3-cd]pyrene; and also exceeds the residential soil screening level for Benzo(b)fluoranthene. Only Benzo(a)pyrene is exceeded by an order of magnitude (2.8 mg/kg in the sample against an industrial

[5] See Code of Federal Regulations: 40 CFR §261.24(a)

PRG of 0.211 mg/kg) while the remaining exceedences are within a range of 150% to 300% of the PRG value.

Section 3.2 of the 2004 Removal Assessment Report for the Seven Out Tank Site quotes the EPA Region 9 PRG website[6] to provide the following explanation of why this comparison was made:

> *PRGs "are risk-based concentrations that are intended to assist risk assessors and others in initial screening-level evaluations of environmental measurements. The PRGs contained in the Region 9 PRG Table are generic; they are calculated without site specific information". The website also states that "PRGs should be viewed as Agency guidelines, not legally enforceable standards. They are used for site 'screening' and as initial cleanup goals, if applicable. PRGs are not de facto cleanup standards and should not be applied as such. However, they are helpful in providing long-term targets to use during the analysis of different remedial alternatives."*

It should be noted that PRGs (e.g., RSLs) are used to narrow down the list of detected chemicals that need further evaluation for health risk which then is used to help determine the need for remedial action. For EPA Removal sites, comparison with RMLs serve to complete this further evaluation step. Screening levels that are used to evaluate sites for an emergency or a time critical removal action are typically higher than the PRG value and have been referred to as "Removal Action Levels" (RALs) or "Removal Management Levels" (RMLs) (Ref. 16). These values are similar to PRGs in that they are not site-specific and not enforceable, but are different in that they are used to provide guidance for initiating an action. Table 3 compares the most recent version of RMLs to the most recent version of RSLs (Ref. 18):

Table 3. Latest versions of Regional Screening Levels and Removal Management Levels

	Source:	RSL for Residential Soils	RSL for Industrial Soils	RML for Residential Soils	RML for Industrial Soils
	Date:	Distributed November, 2013	Distributed November, 2013	Distributed Dec, 2013	Distributed Dec, 2013
	Units:	mg/kg	mg/kg	mg/kg	mg/kg
Polynuclear Aromatic Hydrocarbons (PAHs)	Benz(a)anthracene	0.15	2.1	15	210
	Benzo(a)pyrene	0.015	0.21	1.5	21
	Benzo(b)fluoranthene	0.15	2.1	15	210
	Benzo(k)fluoranthene	1.5	21	150	2100
	Chrysene	15	210	1500	21000
	Dibenz[a,h]anthracene	0.015	0.21	1.5	21
	Fluoranthrene	2800	22000	6900	66000
	Indeno[1,2,3-cd]pyrene	0.15	2.1	15	210
	Phenanthrene	NSA	NSA	NSA	NSA
	Pyrene	1700	17000	5200	50000

[6] http://www.epa.gov/region09Avaste/srund/prg/rndex.htm

When compared to the RMLs for residential and industrial soils, a single RML for residential soil (1.5 mg/kg) is exceeded by Benzo(a)pyrene in sample SO-SW (2.8 mg/kg). Despite exceeding the residential RML by 180%, the concentration is still one eighth of the industrial RML and is merely a single location within an industrial property (it is not representative of the property as a whole). Moreover, PAHs were not detected within the contents of the tanks on-site when samples were collected during EPA's removal assessment in 2004.

1.2.2.3. *PAH Concentrations in Above Ground Storage Tanks at the Seven Out Tank Site*

PAHs were reported in samples that were taken from tanks at the Site as part of the 2008 removal action. Several of these samples were split for independent analysis by EPA's START contractor, but many of the results were flagged during quality assurance review as estimates of an actual concentration. This may have been due to the relatively low concentrations that were detected in the samples. Tables 4 and 5 present the data from samples that were collected from the tanks during November 2008 (Ref. 11 and Ref. 21):

Table 4. Concentrations of PAHs from Tanks CT-1 and CT-4

	Source:	Tank CT-1 (Liquid)		Tank CT-1 (Solid)		CT-4 (Solid)
	Sampler:	EPA START Contractor Tetra Tech (split)	RP Group Contractor Winter Environmental	EPA START Contractor Tetra Tech (split)	RP Group Contractor Winter Environmental	RP Group Contractor Winter Environmental
	Date:	11/11/2008	11/11/2008	11/11/2008	11/11/2008	11/11/2008
	Units:	mg/L	mg/L	mg/kg	mg/kg	mg/kg
Polynuclear Aromatic Hydrocarbons (PAHs)	Benz(a)anthracene	ND	0.0346 J	ND	ND	0.66 J
	Benzo(a)pyrene	ND	0.0262 J	ND	ND	0.54 J
	Benzo(b)fluoranthene	ND	0.0341 J	ND	ND	0.69 J
	Benzo(k)fluoranthene	0.0045 J	0.0287 J	ND	0.67 J	1.1 J
	Chrysene	0.0089 J	0.0463 J	ND	0.57 J	1.2 J
	Dibenz[a,h]anthracene	ND	ND	ND	ND	ND
	Fluoranthrene	0.027 J	153	28 J	1.3 J	2.7 J
	Indeno[1,2,3-cd]pyrene	ND	0.0147 J	ND	ND	ND
	Phenanthrene	0.011 J	221	54 J	1.8 J	1.6 J
	Pyrene	0.0071 J	88.8	ND	ND	1.4 J

Table 5. Concentrations of PAHs from Tank CT-5

	Source:	Tank CT-5 (Liquid)		Tank CT-5 (Solid)		
	Sampler:	EPA START Contractor Tetra Tech (split)	RP Group Contractor Winter Environmental	EPA START Contractor Tetra Tech (split)	EPA START Contractor Tetra Tech (split duplicate)	RP Group Contractor Winter Environmental
	Date:	11/11/2008	11/11/2008	11/11/2008	11/11/2008	11/11/2008
	Units:	mg/L	mg/L	mg/kg	mg/kg	mg/kg
Polynuclear Aromatic Hydrocarbons (PAHs)	Benz(a)anthracene	ND	ND	10 J	17 J	ND
	Benzo(a)pyrene	0.0060 J	ND	ND	ND	ND
	Benzo(b)fluoranthene	0.01 J	ND	ND	24 J	ND
	Benzo(k)fluoranthene	0.0084 J	ND	ND	19 J	0.59 J
	Chrysene	0.017 J	ND	25 J	ND	0.63 J
	Dibenz[a,h]anthracene	ND	ND	ND	ND	ND
	Fluoranthrene	0.037 J	0.00352 J	95 J	130 J	2.8 J
	Indeno[1,2,3-cd]pyrene	ND	ND	ND	ND	ND
	Phenanthrene	0.0099 J	ND	55 J	78 J	2.3 J
	Pyrene	ND	0.00305 J	14 J	24 J	0.8 J

Upon initial inspection, it appears that the sludge in Tank CT-5 was the only potential source of PAHs (the 250 gallons of sludge in tank CT-5 represented less than 1/25 of the tank's total contents and less than 1/2,000 of all waste at the Site) but the values were difficult to discern and could only be estimated. Split samples were analyzed by two separate laboratories using the same EPA extraction methods (SW-846 3510C) and analysis methods (SW-846 8270C)[7]. Discrepancies between split samples were not consistent and values within the same sample could not be repeated (as evidenced by the duplicate sample for CT-5-Solid) which indicates a high level of interference within the sample itself.

Not represented in Tables 4 and 5 are samples that EPA collected from the tanks as of the 2004 RSE. No PAHs were detected in these 2004 tank samples and thus PAHs were not identified as a contaminant of concern at the Site. The contaminants of concern that were cited in EPA's 2007 Enforcement Action Memorandum included: acetone, benzene, sulfuric acid, sodium hydroxide, D002 hazardous wastes[8] (corrosives), and used oil.

1.2.3. INITIAL SITE RECOMMENDATION

Additional sampling was recommended to delineate the potential contaminants in the drainage pathway that may have been released from the Site. Also, a detailed and up-to-date drainage path evaluation was recommended to determine whether previous determinations of runoff behavior from the Site were either inaccurate or have changed.

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[7] SW-846 is an EPA publication titled *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* More information on SW-846 methods is available at: http://www.epa.gov/waste/hazard/testmethods/sw846/index.htm

[8] Resource Conservation and Recovery Act (RCRA) waste code D002 identifies corrosives with a pH less than or equal to 2 or greater than or equal to 12.5 as characteristic hazardous wastes (40 CFR §261.22)

1.2.4. ADDITIONAL ACTIVITIES

1.2.4.1. *REVIEW OF CONCERNS AT RUSKIN ELEMENTARY SCHOOL*

Concerns identified by the community representatives had included illnesses and surface waters at the Ruskin Elementary School in Ware County. OSC Huyser visited the Ruskin Elementary School on September 5, 2013 and observed that the school is in a remote location, it is relatively distant from the Seven Out Tank Site (more than 5.5 miles), and there were no visible surface water contaminants or potential sources of contamination (additionally, no mobilized groundwater contamination has been suspected or attributed to the Site and no groundwater wells exist at-, or are used by-, the school). OSC Huyser informed representatives from Ware County Schools that there is no available information to suggest that the Ruskin Elementary School has been impacted by the Seven Out Tank Site. Assistance regarding any other health or environmental concerns at the school can be communicated through agencies of Ware County and the State of Georgia.

1.2.4.2. *REMOVAL OF RECYCLABLE MATERIALS FROM SEVEN OUT TANK SITE*

On October 30, 2013, OSC Huyser was contacted by an individual stating that he had been hired by the owner of Seven Out, LLC to dismantle and recycle the tanks at the Site. The recycler was requesting information about necessary permits or other approvals to initiate the work. OSC Huyser informed the caller that EPA's work at the Site had been completed and there was no reason to believe that contaminated materials remained at the Site; but that this did not relieve the recycler from responsibility for securing any applicable city, county, or state permits for the work, or from responsibility for reporting spills or discharges that may be caused or discovered.

1.2.4.3. *PUBLIC AVAILABILITY SESSION*

EPA hosted a public availability session at Waycross City Hall on the evening of November 14, 2013, to discuss the history of EPA's cleanup with the Seven Out Tank Site and receive comments from the community on issues that individuals felt needed to be addressed. EPA was joined by GAEPD and Georgia DPH to cover a wider range of expertise and other concerns. GAEPD was able to address cleanup activities related to other nearby facilities such as the CSX Rice Yard and the former manufactured gas plant (MGP) on Glenmore Avenue which was formerly addressed by Atlanta Gas Light. DPH was able to address the health data review and health consultation that was prepared in response to community requests beginning in July, 2013.

The event was attended by approximately 75 residents, interested parties from the surrounding area, media, and representatives of various government and non-government organizations. Both EPA and GAEPD discussed sampling events that would be conducted in the near future to evaluate whether contamination from the Seven Out Tank facility and the CSX Rice Yard, respectively, had migrated to the surrounding neighborhood.

2.0 FRANCIS STREET SITE ASSESSMENT - REMOVAL SITE EVALUATION

2.1. ADDITIONAL SAMPLING

The additional sampling proposed by EPA focuses on the drainage pathway from the Site and evaluates whether contaminants of concern in sample SO-SW from the 2004 RSE have migrated downstream.

2.1.1. INCREMENTAL SAMPLING METHOD

Incremental Sampling Method (ISM) (ITRC, 2012) was selected to provide a high quality representative sample of mean contaminant concentrations in distinct sections of the drainage path. The method utilizes a large quantity of sample locations ("aliquots") to provide a representative sample ("decision unit"[9]) from a specific area; the aliquots are then mixed and processed and analyzed in the laboratory. Due to the increased density of aliquots and systematic mixing ("homogenizing") of the material, results from ISM samples can yield a greater degree of confidence when compared to other sampling methods such as discrete sampling (i.e. "grab sampling") or composite sampling (i.e. "representative sampling", see Ref. 6).

As employed on the Francis Street Site Assessment, the ISM approach provided a clear picture of PAH concentrations downstream of the Site and the ability to compare those to PAH concentrations upstream of the drainage path. The "decision units" (DUs) identified by EPA were selected based on criteria that included:

- Location relative to drainage path;
- Influence of potential contaminant sources;
- Use of area and contributing stormwater sources
- Access to waterway; and,
- Condition or features of waterway.

Each decision unit is characterized by both comparable features with neighboring units and distinct elements designed to illustrate contaminant migration through the drainage path. Drainage from the Site enters a ditch along the south border of the property via both a drainage pipe and overland flow. The ditch flows several hundred feet through an industrial area and discharges to a canal. The canal flows through a residential neighborhood, including a public park, and then underground as it passes the main city center. Based on this information and the above criteria, five decision units were identified for this project:

2.1.1.1. *DECISION UNIT 01 – DU01*

DU-01 is within the drainage ditch but located upstream of the Seven Out facility. This DU was selected to evaluate whether upstream sources of PAHs were being transported into the drainage ditch.

[9] The ISM term for "decision unit" refers to a representative sample specific area which is selected for a set of features that are generally uniform throughout the area itself.

2.1.1.2. *Decision Unit 02 – DU02*

DU-02 is a short section of ditch located at the southeast corner of the Seven Out facility; this short ditch transports drainage water from the east side of the facility to the larger drainage ditch along the south boundary of the property. This DU was selected to evaluate whether noticeably different concentrations of PAHs could be detected at the immediate outfall.

2.1.1.3. *Decision Unit 03 – DU03*

DU-03 is within the drainage ditch section that receives stormwater from the facility, beginning downstream of the intersection of DU-01 and DU-02 but ending before the intersection with a drainage ditch from the CSX Rice Yard property near S Nichols Street. The size, condition, and features of DU-03 are similar to DU-01 and DU-02. This DU was selected for two reasons: 1) measure PAH concentrations in the ditch prior to entering the canal; and, 2) to evaluate whether downstream concentrations of PAHs were measurably higher than upstream concentrations immediately adjacent to the Site.

2.1.1.4. *Decision Unit 04 – DU04*

DU-04 is located within a branch of the city drainage canal but is upstream of the intersection (i.e. "confluence") of the drainage ditch with the canal. The section begins at Alpha Street, then continues north past Margaret Street where it then ends before (on the south side of-) a double railroad bridge over the canal; the confluence with the drainage ditch occurs on the opposing side (the north side-) of the railroad bridge. This DU was selected to evaluate whether upstream sources of PAHs were being transported into the canal.

2.1.1.5. *Decision Unit 05 – DU05*

DU-05 is located within the canal and is downstream of the confluence with the drainage ditch. The section begins at the confluence with the drainage ditch then ends at Folks Street, and includes the section of the canal that traverses through Mary Street Park. This DU was selected for two reasons: 1) to evaluate whether downstream concentrations of PAHs were measurably higher than upstream concentrations in the canal after the confluence with stormwater drainage water from the Site; and, 2) this section represents the most probable location for direct contact exposure to canal sediments by residents in the community.

2.1.2. SAMPLING DESIGN

2.1.2.1. *30 ALIQUOTS FROM EACH DECISION UNIT*

A total of 30 aliquots (i.e. sample locations) were collected from each DU at a depth of 0-3 inches utilizing a stainless steel incremental sampling tool equipped with a plunger that is designed to extract a uniform core at each point. Aliquots were collected strictly from sediment below the water surface, at the left, center, and right of the waterway; this was done at 10 stations along each DU (i.e. 3 points x 10 stations = 30 aliquots)[10]. Each core was placed into a stainless steel bowl, mixed (homogenized) on-site, and the mixture was transferred into a 32-ounce glass jar.

2.1.2.2. *ANALYTICAL METHOD SW-846, 8270D*

The samples were transported to a laboratory where each was dried, sieved[11], mixed, and subsampled according to ISM protocol. The samples were then analyzed for PAHs by Selected Ion Monitoring (SIM) using the EPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846) Method 8270D.

Selection of analyses to determine which chemicals were contained within the samples was based on prior knowledge of materials discovered at the Seven Out Tank Site and suspected for release to the drainage pathway. The PAH family within the group of Semi-Volatile Organic Compounds (SVOCs) were selected based on the concerns that elevated levels of PAHs found in sample SO-SW during the 2004 EPA RSE and the sludge contents of tank CT-5 prior to the 2008-2009 removal action demonstrated the presence of these compounds within the waste process of the facility.

2.1.2.3. *SAMPLE COLLECTION TRAVERSING UPSTREAM*

Samples were taken in an upstream direction, beginning at the farthest point downstream (at Folks Street in DU05) and proceeding in the opposite direction of surface water flow. This was done to minimize the possibility that sediments stirred by sampling activities could be transported and impact samples in a separate decision unit.

2.1.2.4. *ISM REPLICATE/TRIPLICATE PROTOCOL*

The sample process was simultaneously repeated in two decision units (DU03 and DU04) a total of three times for each (ex. DU03A, DU03B, and DU03C) according to ISM protocols. ISM refers to these

[10] Sediment sample FSA-SD-DU02 was collected with only 5 stations (3 points x 5 stations = 15 aliquots) due to the short length of the decision unit; DU02 was only approximately 35 feet long

[11] 10-mesh, 2 millimeter sieve

repeated samples as "replicates" and they are used to calculate confidence (Ref. 8) and precision[12] in the analytical results. Not all decision units must undergo replicate sampling; it is only necessary to select a representative portion of the decision units that will provide an adequate illustration of sampling repeatability across varying conditions and analyte (i.e. "contaminant") concentrations. DU03 and DU04 were selected for replicate sampling because they would be expected to yield the highest and lowest concentrations of PAHs, respectively, if it were discovered that PAH contaminants were migrating downstream from the Site.

2.1.2.5. *Samples at Seven Out Facility and Confluence with Canal*

Additional samples were collected to characterize known and potential contaminant concentrations at the Seven Out property and downstream of the Site. Sediment sample FSA-SC-CO was collected near the intersection ("confluence") of the drainage ditch and the canal to evaluate whether elevated concentrations of PAHs could be found in this immediate location. This sample consisted of a 5-point composite[13]. Although this method is not the same as the ISM samples taken from other decision units, this sample was processed in the laboratory in the same manner as the ISM samples because it was collected from the same sediment media and must be handled in the same manner in order to provide adequately comparable results.

Soil sample FSA-SF-SCW was collected outside the south border of the tank farm at the Seven Out property in the same location as sample SO-SW from the 2004 EPA RSE. Soil sample FSA-SF-CT was collected in a concrete trench at the northeast corner of the Seven Out property where rainwater traverses before draining through a pipe that discharges to the ditch at the southeast corner of the property. Both FSA-SF-SCW and FSA-SF-CT were collected as 5-point composite samples at depths of 0-6 inches.

2.1.2.6. *Data Quality Assurance Samples*

Finally, specific data-quality samples were collected as part of the investigation process to ensure that no sources of contamination were inadvertently introduced as part of the sample collection or analysis processes (known as "cross-contamination"). These samples are designed to provide a high level of quality control (U.S. EPA, 2013b) when collecting field samples and are part of an overall quality assurance process for the project.

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[12] Using Relative Standard Deviation (RSD) (aka "coefficient of variation") which expresses standard deviation as a percentage. $RSD\% = \frac{s}{\bar{X}} \times 100$ where the standard deviation $s = \sqrt{\sum_{i=1}^{n} \frac{(X_i - \bar{X})^2}{n-1}}$ using X_i = the measured value of the replicate, $\bar{X}$ = the mean of the measurements, and n = the number of replicates.

[13] The "composite" sample means that 5 smaller samples from that location were mixed into a single sample to provide a representation of the actual concentration; this is similar but not the same as ISM

2.2. REVIEW OF ADDITIONAL SAMPLING DATA

2.2.1. DISCUSSION OF COMPARISON VALUES

Sample results were compared with a series of generic criteria including RSLs (U.S. EPA, 2013c), RMLs (U.S. EPA, 2013a), and GAEPD Type 1 Soil Risk Reduction Standards[14] ("GA Type 1 RRS").

2.2.1.1. *DISCUSSION OF COMPARISON VALUES: RSLS AND RMLS*

RMLs and RSLs are generated with "default exposure parameters and factors for Reasonable Maximum Exposure (RME) conditions for long-term/chronic exposures," (U.S. EPA, 2013d) so these numbers can often be more conservative than a site-specific action level or cleanup criterion where concentrations are not widespread and observable exposures are not chronic – such is the case at the Seven Out Tank facility, where surface contamination is localized no occupancy or observable exposures are presently documented. During removal site assessments in EPA Region 4, the generic RML tables are commonly referenced as part of the process in evaluating whether to take a removal action. However, comparison with generic RMLs are just part of the initial evaluation process; only the factors listed in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP)[15] can be used to determine the appropriateness of a removal action. Once a decision has been made to undertake a response or removal action, cleanup criteria for contaminants of concern are selected or calculated based on site-specific parameters. The generic RSL tables, by comparison, are used in the preliminary phase of an investigation to evaluate whether a compound has been detected in the environment at a concentration that may be elevated, thus noting that it may be a contaminant of concern; the generic RSLs should only be regarded as an initial *screening* tool and should not be interpreted as a de-facto cleanup standard.

2.2.1.2. *DISCUSSION OF COMPARISON VALUES: GA TYPE 1 RRS*

The GA Type 1 RRSs are State regulated cleanup standards used to demonstrate completion of a corrective action under Georgia Rule 391-3-19-.07; the Type 1 standards are designed to "provide for regulated substance concentrations that [will] pose no significant risk on the basis of standardized exposure assumptions and defined risk levels for residential properties," [Ga. Comp. R. & Regs. R. 391-3-19-.07(6)(a)]. Using the GA Type 1 RRSs in evaluation of this Site is particularly applicable because these were the approved cleanup standards utilized during a remedial action conducted by the Atlanta Gas Light Company (AGL) and overseen by GAEPD between 1997 and 2002 to address contamination from a MGP Site on Glenmore Avenue in Waycross, GA (Ref. 20). The cleanup included removal and restoration of sediments in the canal which covered areas both upstream and downstream of the canal sections sampled during this assessment (decision units DU04 and DU05).

[14] Georgia Compilation of Rules and Regulations Rule ("Ga. Comp. R. & Regs. R.") 391-3-19-.07(6)
[15] See 40 CFR §300.414(b)(2)(i-vii)

2.2.2. RESULTS FROM SOIL SAMPLES OUTSIDE SOUTH CONTAINMENT WALL

Results show that the soil outside the south perimeter of the tank farm at the Seven Out facility from which sample SO-SW was collected during the EPA RSE in 2004 have remained relatively unchanged:

Table 6. Comparison of Soil Samples in Same Area from 2004 to 2013

	Source:	Soil sample SO-SW Taken by EPA Near South Perimeter of Seven Out Site	Soil sample FSA-SF-SCW[16] taken by EPA in same location as SO-SW
	Date:	Collected 8/26/2004	Collected 12/19/2013
	Units:	mg/kg	mg/kg
Polynuclear Aromatic Hydrocarbons (PAHs)	Benz(a)anthracene	2.4	1.9
	Benzo(a)pyrene	2.8	2.0
	Benzo(b)fluoranthene	1.8	3.1
	Benzo(k)fluoranthene	3.2	1.1
	Chrysene	3.1	2.6
	Dibenz[a,h]anthracene	0.65	0.43 J+
	Fluoranthrene	4.6	5.1
	Indeno[1,2,3-cd]pyrene	3	1.7
	Phenanthrene	1.8	3.6
	Pyrene	4	5.2

The concerns regarding contamination at the Site are generally related to this location and the possibility that contaminants, particularly Benzo(a)pyrene, may migrate off-Site into residential areas. Samples FSA-SF-SCW and FSA-SF-SCW-DUP confirm that concentrations of PAHs have persisted in this location for several years. Concentrations of Benzo(a)pyrene in these samples meet or exceed both the EPA generic RML for Residential Soils (1.5 mg/kg) and the Georgia Type 1 RRS (1.64 mg/kg) but do not exceed the EPA generic RML for Industrial Soils (21 mg/kg) or a calculated value for the Georgia Type 3[17] RRS (7.84 mg/kg)[18] for non-residential use areas.

Both residential and industrial generic risk calculations are based on assumptions of frequent and chronic ("long term") exposure. A site-specific calculation on actual exposure conditions where direct contact exposures are not frequent can be expected to yield action levels that are far greater than the generic values.

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[16] Average of FSA-SF-SCW and FSA-SF-SCW-DUP

[17] Type 3 standards are used to "provide for regulated substance concentrations that pose not significant risk on the bases of standardized exposure assumptions and defined risk levels for the non-residential use scenario," [Ga. Comp. R. & Regs. R. 391-3-19-.07(8)(a)].

[18] The surface soil Type 3 RRS for Benzo(a)pyrene of 7.84 mg/kg was calculated using requirements of Type 3 Standards for soils listed in Ga. Comp. R. & Regs. R. 391-3-19-.07(8)(d)(2)(ii) supplemented with chemical-specific properties for Benzo(a)pyrene listed in Part 5 of U.S. EPA. *Soil Screening Guidance: Technical Background Document and User's Guide.* EPA/540/R-95/128. May, 1996

2.2.2.1. *Soil Samples: Direct Contact Exposure Risk*

The soil represented in samples SO-SW and FSA-SF-SCW consist of an area no greater than 200 square feet, which is less than 0.5% of the non-paved surfaces on the property and less than 0.15% of the total property surface. Concentrations in these samples are therefore indicative of only a small area and are not representative of average surface concentrations at the Site. The soil in this section is also heavily vegetated, further impeding both risk of exposure and migration. In 2005, GAEPD completed a preliminary assessment of the Site (Ref. 2) and reviewed population data, threatened or endangered species, site conditions, and available data from EPA's 2004 RSE. Part of GAEPD's conclusion addressed the soil contamination that was found and determined that soil exposure was not considered a serious threat because no primary targets could be identified.

2.2.2.2. *Soil Samples: Groundwater Contamination Risk*

Migration of contaminants to groundwater is also not considered a serious threat; this is due to the relatively low concentration, small size of the source area, and low mobility of PAHs compared with the depth and distance of ground water wells in the area. PAHs are only moderately soluble in water (i.e "hydrophobic") and have a high affinity for organic carbon, which means that they bind to the soils and are less likely to infiltrate the soil to the groundwater. PAHs are more likely to be transported with erosion of surface soils through the surface water flow and drainage. The City of Waycross public water supply is provided by groundwater wells that exceed depths of 500 feet and are greater than 1300 feet from the site. GAEPD followed the 2005 Preliminary Assessment with a SI in 2006 (Ref. 3) which concluded that no targets exist in the groundwater aquifer and risk of groundwater contamination from the site appears negligible.

2.2.2.3. *EPA Recommendation for Surface Soil: No Action*

EPA agrees with GAEPD's conclusions from the 2006 SI (Ref. 3) and, based on sample results collected in December, 2013, determines that the conclusions remain applicable at this time. Due to the lack of threat posed by the soils represented in samples SO-SW and FSA-FS-SCW, excavation or other response action to address this area is not necessary and is not recommended.

2.2.3. Results from Sediment Samples in Drainage Ditch South of Site

Sampling in the drainage ditch at the south border of the Site and the nearest branch of the city drainage canal provides information on whether PAHs from the Site are being transported downstream. Results show that the concentrations of PAHs in the sediments of the drainage ditch are significantly lower than those found in soils of 200 square foot area of concern outside the south containment wall of the Site:

Table 7. Results of Sediment Samples from Drainage Ditch at South Border of Site

	Source:	Sediment sample FSA-SD-DU01 taken by EPA in drainage ditch – upstream of Site	Sediment sample FSA-SD-DU02 taken by EPA in drainage ditch – near outfall from Site drain	Sediment sample FSA-SD-DU03-AVG[19] taken by EPA in drainage ditch – downstream of Site
	Date:	Collected 12/19/2013	Collected 12/19/2013	Collected 12/19/2013
	Units:	mg/kg	mg/kg	mg/kg
Polynuclear Aromatic Hydrocarbons (PAHs)	Benz(a)anthracene	0.37	0.32	0.18
	Benzo(a)pyrene	0.58	0.39	0.29
	Benzo(b)fluoranthene	1.5	0.76	0.66
	Benzo(k)fluoranthene	0.43	0.24	0.21
	Chrysene	0.51	0.42	0.26
	Dibenz[a,h]anthracene	0.15	0.087	0.076
	Fluoranthrene	0.58	0.79	0.32
	Indeno[1,2,3-cd]pyrene	0.021	0.34	0.28
	Phenanthrene	0.6	0.48	0.11 J
	Pyrene	0.23	0.78	0.38

None of the constituents measured in samples taken from DU01, DU02, or DU03 exceed either the residential or industrial EPA generic RMLs nor do they exceed the Georgia Type I or Type 3 RRSs. EPA generic RSLs for residential soils are exceeded for Benz(a)anthracene (0.15 mg/kg), Benzo(b)fluoranthene (0.15 mg/kg), Dibenz[a,h]anthracene (0.015 mg/kg), and Indeno [1,2,3-cd]pyrene (0.15 mg/kg) while EPA generic RSLs for industrial soils are exceeded for Benzo(a)pyrene (0.21 mg/kg). As stated in section 2.2.1.1., generic RSL values are used in the preliminary phase of an investigation to evaluate whether a compound has been detected in the environment at a concentration that may be elevated and are only to be regarded as an initial *screening* tool and should not be interpreted as a de-facto cleanup standard. Since RMLs are not exceeded, the reported levels are all below or within the EPA target cancer risk range based on residential soil (i.e., unrestricted use).

The ditch consists of steep banks, is heavily vegetated, and there is no indication the ditch is accessed regularly; therefore a site-specific calculation on actual exposure conditions where direct contact exposures are not frequent can be expected to yield action levels that are far greater than the generic values[20].

2.2.3.1. *Ditch Samples: Decreasing Concentrations Downstream*

Comparison of the ditch samples suggests a trend of decreasing PAH concentrations from the "upstream" sample in DU01 to the intersection with DU02 and again to the downstream sample in DU03. This decreasing concentration trend downstream through the three decision units occurs in 11 of

[19] Average of FSA-SF-DU03-A, FSA-SF-DU03-B, and FSA-SF-DU03-C

[20] As stated previously, generic RSL and RML values for both residential and industrial soils are based on frequent and chronic (long term) exposure assumptions

the 17 analytes[21] (a decreasing trend downstream from DU01 to DU03 occurs with higher concentrations in the middle at DU02 in the remaining 6 analytes[22]). This might suggest that the occurrence of PAHs in the drainage ditch is primarily contributed by a source other than the Seven Out Tank Site. PAHs are associated with several common sources, including but not limited to, the incomplete combustion of fuels such as gasoline and diesel. The upstream source of storm water to the drainage ditch includes contributions from Francis Street, the adjacent commercial district, and a portion of the northeast corner of the CSX Rice Yard facility.

2.2.3.2. *Ditch Samples: Evaluation of Ditch Elevation Profile*

EPA visited the Site on February 18, 2014, to survey the drainage ditch elevation profile (U.S. EPA, 2014) and determine whether the gradient in the ditch would allow rainwater from the Seven Out Tank Site to flow "upstream" into DU01. The survey indicated that the elevation drop from the beginning of DU01 to near the intersection with DU02 (over a distance of approximately 270 feet) was effectively zero with a range in elevation between the two endpoints of only 3 inches. In comparison, the elevation drop of DU03 from the beginning near DU02 to the culvert under S Nichols Street (over a distance of approximately 830 feet), was 3.3 feet (0.4% grade or 0.23-degrees). The shallow grade of DU01 means that drainage from the Site through the outfall in DU02 could potentially flow into DU01 and sediments could settle in this section of the ditch.

Surface water runoff from the Seven Out facility or general runoff from the surrounding area could be all be contributing factors to concentrations of PAHs in the "upstream" decision unit but no conclusion can be made that either is the primary source of PAHs in the decision unit area.

2.2.3.3. *EPA Recommendation for Drainage Ditch: No Action*

Due to the lack of threat posed by the sediments represented in samples FSA-SD-DU01, FSA-SD-DU02, and FSA-SD-DU03, excavation or other response action to address the ditch is not necessary and is not recommended.

2.2.4. Results from Sediment Samples in Branch of City Drainage Canal

Sampling in the drainage canal provides information on whether PAHs that were measured in the drainage ditch are being transported into residential areas. Results show that the concentrations of PAHs in the sediments of the drainage canal are significantly lower than those found in both the soils of 200 square foot area of concern outside the south containment wall of the Site *and* the drainage ditch at the south border of the Site:

[21] Acenaphthene, Acenaphthylene, Antrhacene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluouranthene, Benzo[g,h,i]perylene, Benzo(k)fluoranthene, Chrysene, Dibenz[a,h]antrhacene, and Indeno[1,2,3-cd]pyrene

[22] 2-Methylnaphthalene, Fluoranthene, Fluorene, Naphthalene, Phenanthrene, and Pyrene

Table 8. Results of Sediment Samples from Drainage Canal

		Source:	Sediment sample FSA-SD-DU04-AVG[23] taken by EPA in canal – upstream of FSA-SD-CO	Sediment sample FSA-SD-CO taken by EPA in canal – confluence[24] of ditch and canal	Sediment sample FSA-SD-DU05 taken by EPA in canal – downstream of FSA-SD-CO
		Date:	Collected 12/19/2013	Collected 12/19/2013	Collected 12/19/2013
		Units:	mg/kg	mg/kg	mg/kg
Polynuclear Aromatic Hydrocarbons (PAHs)	Benz(a)anthracene		0.019 J	0.0045 J	0.013 J+
	Benzo(a)pyrene		0.027 J	0.006	0.015 J+
	Benzo(b)fluoranthene		0.044 J	0.01	0.02 J+
	Benzo(k)fluoranthene		0.014 J	0.003 J	0.008 J+
	Chrysene		0.024 J	0.0068	0.016 J+
	Dibenz[a,h]anthracene		0.0062 J	0.0048 U	0.0031 J+
	Fluoranthrene		0.032 J	0.01	0.02 J+
	Indeno[1,2,3-cd]pyrene		0.025 J	0.0051	0.011 J+
	Phenanthrene		0.0104	0.006	0.0061 J+
	Pyrene		0.036 J	0.014	0.027 J+

None of the constituents measured in samples taken from DU04, DU05, or the confluence (intersection) with the drainage ditch exceed either the residential or industrial EPA generic RMLs nor do they exceed the Georgia Type I or Type 3 RRSs. EPA generic RSLs for residential soils were exceeded only for Benzo(a)pyrene (0.015 mg/kg). As stated in section 2.2.1.1. and repeated in section 2.2.3., generic RSL values are only to be regarded as an initial *screening* tool and should not be interpreted as a de-facto cleanup standard.

2.2.4.1. *Canal Samples: Discussion of Distinction Between Dry Soil and Sediment*

When the samples were collected, water in the canal was observed at widths from 6-10 feet, average depths of 6-24 inches and surface water flow at approximately 0.5 feet per second. It flows through residential neighborhoods, including Mary Street park, where it is reported that children regularly play in the water. Even under these circumstances, a site-specific calculation on actual exposure conditions where direct contact exposures are not frequent can be expected to yield action levels that are far greater than the generic values for at least two reasons: 1) The generic RMLs and RSLs are based on frequent and long-term exposures requiring direct contact with the contaminant and despite the proximity of the residences and the activity in the waterway, the site-specific conditions do not amount to the frequent contact assumptions that are made in the generic calculations; and, 2) Exposure conditions in the generic values are calculated for dry surface soils which are used as comparison tools because they are readily available, but do not directly translate to sediment exposure conditions (the water in the canal provides a transport mechanism for contaminants but also provides a protective cover which can reduce exposure incidences to sediments at the bottom).

[23] Average of FSA-SF-DU04-A, FSA-SF-DU04-B, and FSA-SF-DU04-C

[24] The "confluence" is the intersection point where drainage water from the ditch enters the canal

2.2.4.2. *CANAL SAMPLES: GA DPH HEALTH CONSULTATION SITE-SPECIFIC CALCULATIONS*

A site-specific exposure dose calculation was made by the Georgia Department of Public Health (DPH) Chemical Hazards Program in a Health Consultation (GA DPH, 2013) that was completed to address concerns at the Seven Out facility and Mary Street Park. The calculations were made using analytical data provided by a resident who collected a sediment sample[25] from the canal in the park and sent the sample to be analyzed by a private laboratory[26].

Table 9. Sediment Samples Collected in Canal by EPA and by Community Group

	Source:	Sediment sample FSA-SD-DU05 taken by EPA in canal – downstream of FSA-SD-CO	Sediment Sample Collected by Resident[27] in Unnamed Creek at Mary Street Park
	Analytical Method:	8270C SIM	8270C
	Date:	Collected 12/19/2013	Collected 7/3/2013
	Units:	mg/kg	mg/kg
Polynuclear Aromatic Hydrocarbons (PAHs)	Benz(a)anthracene	0.013 J+	0.556
	Benzo(a)pyrene	0.015 J+	ND
	Benzo(b)fluoranthene	0.02 J+	0.827
	Benzo(k)fluoranthene	0.008 J+	0.398
	Chrysene	0.016 J+	0.067
	Dibenz[a,h]anthracene	0.0031 J+	ND
	Fluoranthrene	0.02 J+	0.691
	Indeno[1,2,3-cd]pyrene	0.011 J+	ND
	Phenanthrene	0.0061 J+	0.378
	Pyrene	0.027 J+	1.52

The results of the sample collected by the resident (Table 9) showed levels of PAHs that were generally higher than those detected in EPA sample FSA-SD-DU05[28] although they showed no levels for Benzo(a)pyrene, Dibenz[a,h]anthracene, or Indeno[1,2,3-cd]pyrene above a detection limit of 0.282 mg/kg. As with sample FSA-SD-DU05, none of the constituents measured in sample taken by the resident exceed either the residential or industrial EPA generic RMLs nor do they exceed the Georgia Type I or Type 3 RRSs. EPA generic RSLs for residential soils in the resident's sample were exceeded for Benzo(a)anthracene (0.15 mg/kg) and Benzo(b)fluoranthene (0.15 mg/kg).

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[25] This sample and the laboratory analysis that was obtained is useful for comparative purposes only. The sample was not collected under any sampling and analysis plan or a quality assurance project plan and therefore the results cannot be validated for decision-making purposes.

[26] Ana-Lab Corp., Kilgore, TX

[27] Ana-Lab Corp., Project # 619468, Report of Soil Sample Results from Mary Street (Folks) Park, Waycross, GA, 07/03/2013.

[28] Note that all results in Table 9 for FSA-SD-DU05 have been flagged with a "J+"; this means that the analyte was positively identified but the associated value is the approximate concentration of the analyte in the sample and may be biased high

In order to account for the mixture of PAHs that were detected, DPH calculated an estimated *cumulative* exposure dose (Ref. 5) as well as an estimated *cumulative* cancer risk that children may have from exposure in the park based on very conservative exposure scenarios. DPH's findings reported that the exposure dose and cancer risk in these scenarios was significantly lower than the assumptions that are used by EPA to calculate generic RSL values.

The absence of Benzo(a)pyrene, Dibenz[a,h]anthracene, or Indeno[1,2,3-cd]pyrene in the resident's sample compared to their presence in sample FSA-SD-DU05 is inconsequential due to the relatively higher concentrations of the remaining compounds in the resident's sample. The method that is used to calculate a cumulative PAH concentration (known as "Benzo[a]pyrene toxic equivalents" or "BaP-TE") yields a cumulative PAH concentration in sample FSA-SD-DU05 that is six times lower than the equivalent value in the resident's sample. Repeating DPH's calculations using results from sample FSA-SD-DU05 would provide exposure dose and cancer risk values that are even lower than the initial findings[29].

2.2.4.3. *Canal Samples: Decreasing Concentrations Downstream*

Comparison of canal samples suggest a trend of decreasing PAH concentrations from the upstream sample in DU04 to the downstream sample in DU05 (concentrations of PAHs at the intersection with the drainage ditch in sample FSA-SD-CO are generally lower than those in both DU04 and DU05).

Although values in FSA-SD-DU05 are less than those in the average of FSA-SD-DU04-(A, B, and C) and is outside the standard deviation for triplicate samples FSA-SD-DU04-(A, B, and C) presented in Table 3 of EPA START Final Letter report (U.S. EPA, 2014), the difference is less than a factor of 10 (an "order of magnitude") and the concentrations are still very low[30]. Laboratory triplicate analysis performed on sample FSA-SD-DU04-A showed greater variability among the results resulting in a relatively large relative standard deviation (RSD ≈ 13-24%) for the results in samples FSA-SD-DU04-(A, B, and C). By comparison, the relative standard deviation for the results in triplicate samples FSA-SD-DU03-(A,B, and C) from the drainage ditch were much narrower (RSD ≈ 2-6%) which is likely due to the relatively higher concentrations in these samples.

Although Table 9 appears to show a decreasing concentration in PAHs along the downstream direction, the difference between PAH values in DU04 and DU05 is too narrow and no definitive conclusion can be made on this matter.

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[29] The distinction between *exposure dose & cancer risk* and *screening level & action level* is critical in this case. Sections 2.2.2., 2.2.3., and 2.2.4.1. point out that site-specific calculations for *screening levels* and *action levels* would be *greater* than generic valued due to less actual exposures than the assumptions used in calculating the generic value. *Screening levels* and *action levels* refer to a comparative value for concentrations of a contaminant in soil. *Exposure dose* and *cancer risks* are different terms that refer, respectively, to the quantity of a contaminant entering a body and resulting cancer risk under specific circumstances and soil concentrations.

[30] This is additionally supported by the fact that all results in FSA-SD-DU04-A and FSA-SD-DU05 are flagged with a "J" which means that the analyte was positively identified but the associated value is the approximate concentration of the analyte in the sample; this flag is not uncommon for very low concentrations

2.2.4.4. *CANAL SAMPLES: REMEDIATION OF CANAL WAS SUCCESSFUL FOR PAH REMOVAL*

Results of the samples presented in Table 9 demonstrate that the remedial action conducted by the Atlanta Gas Light Company between 1997 and 2002 to address contamination from a former MGP Site on Glenmore Avenue successfully removed PAHs in the areas of decision units DU04 and DU05 below the cleanup goal of Georgia Type 1 RRSs. GAEPD has determined that this remedial action is complete and EPA does not object to GAEPD's decision.

2.2.4.5. *EPA RECOMMENDATION FOR DRAINAGE DITCH: NO ACTION*

Due to the lack of threat posed by the sediments represented in samples FSA-SD-DU04, FSA-SD-CO, and FSA-SD-DU05, excavation or other response action to address the canal is not necessary and is not recommended.

2.3. DRAINAGE PATH EVALUATION

EPA's recommendation for additional work in the September 19, 2013 Special POLREP (Attachment 1) included the completion of a detailed and up-to-date drainage path evaluation to determine whether previous statements of runoff behavior from the Site were either inaccurate or have changed. The Drainage Path Evaluation is provided in Appendix 3. The evaluation concluded that observed drainage patterns at the Seven Out Tank Site and surrounding area (within the boundaries of the Site and DU01 through DU05) have not changed since 2004.

3.0 RECOMMENDATION

The additional sampling that was recommended in EPA's Seven Out Tank Site Special POLREP dated September 19, 2013 (Attachment 1) was conducted on December 19, 2013. Prior to sampling the Quality Assurance Project Plan (QAPP) which described the sampling even was evaluated by team members from both GAEPD and Georgia DPH. The QAPP was also distributed to several interested public and private parties identified during the November 14, 2013 public availability session. Sample results were thoroughly reviewed by EPA with supporting reviews by GAEPD and Georgia DPH. Prior to completion of a formal report, the data from the sampling event was distributed to the same group of public and private parties. The purpose of this report has been to document EPA Region 4 ERRB's decision regarding further assessment or removal action at the Francis Street Site or Seven Out Tank Site.

Section 300.415 of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) lists factors to be considered in determining the appropriateness of a removal action [40 CFR §300.414(b)(2)(i-vii)]. After careful review of the recent and historical data available for the Site, EPA Region 4 ERRB finds that the Francis Street Site and the Seven Out Tank Site do not meet these criteria and that a removal action is not recommended.

EPA did not encounter an indication of additional contaminants or contaminated media that could have been overlooked by the December 19, 2013 sampling event. The sampling design was based on available information of probable compounds and exposure scenarios resulting from the Seven Out Tank Site. Without additional information on actual or potential releases to the environment of contaminants associated with Seven Out Tank, LLC that have not already been evaluated, EPA Region 4 ERRB does not recommend an additional sampling event for RSE purposes.

GAEPD and Georgia DPH have and/or will release additional reports or other materials in response to community concerns in Waycross, Georgia. EPA will continue to support the State of Georgia wherever possible in order to ensure that these concerns are adequately addressed.

APPENDIX 1 – GLOSSARY OF ACRONYMS

GLOSSARY OF ACRONYMS

AGL	Atlanta Gas Light Company
BaP-TE	Benzo(a)pyrene - Toxicity Equivalent
CO	Confluence
CT	Concrete trench
DU	Decision Unit
DUP	Duplicate
EPA	U.S. Environmental Protection Agency
ERRB	U.S. EPA Region 4 Emergency Response and Removal Branch
FSA	Francis Street Assessment
GAEPD	Georgia Environmental Protection Division
HW	Hazardous waste
ISL	Industrial Screening Level
ISM	Incremental Sampling Method
J	Data validation flag indicating that the analyte was positively identified but the associated value is the approximate concentration of the analyte in the sample
J+	Data validation flag indicating that the analyte was positively identified but the associated value is the approximate concentration of the analyte in the sample and may be biased high
LLC	Limited Liability Corporation
mg/kg	milligrams per kilogram (= 1,000 µg/kg)
mg/L	milligrams per liter
MGP	Manufactured Gas Plant
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NL	Not listed

OSC	On-Scene Coordinator
PAHs	Polycyclic Aromatic Hydrocarbons
POLREP	Pollution Report
POTW	Publicly-Owned Treatment Works
ppm	parts per million (= 1 mg/kg)
PRG	Preliminary Remediation Goal
QAPP	Quality Assurance Project Plan
R4	Region 4
RAL	Removal Action Level
RME	Reasonable Maximum Exposure
RML	Removal Management Level
RRS	Risk Reduction Standard
RSD	Relative Standard Deviation
RSE	Removal Site Evaluation
RSL	Regional Screening Level
SCW	South containment wall
SD	Sediment
SF	Surface soil
SIM	Selected Ion Monitoring
SVOC	Semi-Volatile Organic Compounds
U	Data validation flag indicating that the analyte was analyzed for but was not detected and the number reported is the laboratory-derived reporting limit (RL) for the constituent in the sample
µg/kg	micrograms per kilogram (= 0.001 mg/kg)

APPENDIX 2 – REFERENCES

REFERENCES

(1) Georgia DPH. *Health Consultation. Seven Out, LLC Facility and Soil Contamination Concerns at Mary Street Park (Folks Park). Waycross, Ware County, Georgia.* 2013

(2) Georgia EPD. *Preliminary Assessment. Seven Out LLC Tank. EPA ID # GAN000407811. Waycross, Ware County, Georgia.* August 8, 2005.

(3) Georgia EPD. *Site Inspection Report, Seven Out LLC Tank. CERCLIS ID. No. GAN000407811.* October, 2006

(4) Interstate Technology & Regulatory Council (ITRC). *Incremental Sampling Methodology.* ISM-1. 2012.

(5) U.S. Environmental Protection Agency. *Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons.* EPA/600/R-93/089. July, 1993.

(6) U.S. Environmental Protection Agency. *Superfund Program Representative Sampling Guidance, Vol. 1: Soil Interim Final.* EPA/540/R-95/141. OSWER Directive 9360.4-10. December, 1995

(7) U.S. Environmental Protection Agency. *Soil Screening Guidance: Technical Background Document and User's Guide.* EPA/540/R-95/128. May, 1996.

(8) U.S. Environmental Protection Agency. *Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites.* OSWER Publication 9285.6-10. December, 2002.

(9) U.S. Environmental Protection Agency, Region 9. *Preliminary Remediation Goals Table.* October, 2004.

(10) U.S. Environmental Protection Agency. *Removal Assessment Report, Seven Out, LLC Site, Waycross, Ware County, Georgia.* December 9, 2004.

(11) U.S. Environmental Protection Agency. *Final Sampling Event Letter Report, Seven Out, Waycross, Ware County, Georgia.* November 30, 2009.

(12) U.S. Environmental Protection Agency. *Final CERCLA Removal Action Letter Report, Seven Out, Waycross, Ware County, Georgia.* March 2, 2010.

(13) U.S. Environmental Protection Agency, Region 4. *Regional Removal Management Level (RML) Summary Table.* December, 2012.

(14) U.S. Environmental Protection Agency. *Field Branches Quality System and Technical Procedures: Field Sampling Quality Control Standard Operating Procedure.* SESDPROC-011-R4. February 5, 2013.

(15) U.S. Environmental Protection Agency, Mid-Atlantic Risk Assessment. *Regional Screening Level (RSL) Summary Table.* May, 2013.

(16) U.S. Environmental Protection Agency, Mid-Atlantic Risk Assessment. *Regional Screening Level (RSL) Summary Table.* November, 2013.

(17) U.S. Environmental Protection Agency, Mid-Atlantic Risk Assessment. *Regional Screening Table – User's Guide.* November, 2013.

(18) U.S. Environmental Protection Agency, Region 4. *Regional Removal Management Levels (RML) Summary Table.* December, 2013.

(19) U.S. Environmental Protection Agency. *Final Assessment Letter Report, Francis Street Site, Waycross, Ware County, Georgia.* April 3, 2014.

(20) Williams Environmental Services, Inc. *Compliance Status Report, Volume 1: Waycross MGP Drainage Canal Project.* Prepared for Atlanta Gas Light Company. May 24, 2000.

(21) Winter Environmental. *Removal Action Report, Seven Out Tank Superfund Site, Waycross, Georgia.* Winter Project No. 08040. Prepared For: Rogers/Towers, Attorneys at Law & U.S. EPA Region 4. September 17, 2009.

APPENDIX 3 – DRAINAGE PATH EVALUATION

DRAINAGE PATH EVALUATION

Francis Street Assessment / Seven Out Tank Site
Waycross, Ware County, Georgia

EPA's recommendation for additional work in the September 19, 2013 Special POLREP[31] included the completion of a detailed and up-to-date drainage path evaluation to determine whether previous statements of runoff behavior from the Seven Out Tank Site (the "Site") were either inaccurate or have changed. Detailed site drainage descriptions can also be found in Georgia Environmental Protection Division's (GA EPD) 2005 Preliminary Assessment[32] and 2006 Site Investigation[33].

Descriptions of drainage features are described here and are considered applicable as-of April 2014. The evaluation concludes that observed drainage patterns at the Seven Out Tank Site and surrounding area (within the boundaries described herein) have not changed since EPA first visited the Site during a 2004 Removal Site Evaluation[34]. A visualization of the size and location of each feature can be found in Figure 1.

- **Seven Out Tank Site – Tank Farm**

  - **Tank Farm – Size**

    Approximately >18,000 square feet

  - **Tank Farm – Route of Discharge**

    None; the area is sloped to the east where it is retained by the unbroken concrete curb surrounding the entirety of the tank farm. Excessive rainwater could overflow to the east following intense successive rain events

  - **Tank Farm – Observations December, 2013**

    No discernible odor or visible contamination on the pooled water surface

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[31] U.S. Environmental Protection Agency. *Special POLREP for Seven Out Tank Site.* September 19, 2013.
[32] Georgia EPA. *Preliminary Assessment. Seven Out LLC Tank. EPA ID # GAN000407811. Waycross, Ware County, Georgia.* August 8, 2005.
[33] Georgia EPD. *Site Inspection Report, Seven Out LLC Tank. CERCLIS ID. No. GAN000407811.* October, 2006.
[34] U.S. Environmental Protection Agency. *Removal Assessment Report, Seven Out, LLC Site, Waycross, Ware County, Georgia.* December 9, 2004.

- **Seven Out Tank Site – East Loading/Unloading Area**

  - **East Loading/Unloading Area – Size**

    Approximately >3,400 square feet

  - **East Loading/Unloading Area – Route of Discharge**

    Sloped to the west where it is designed to drain northward via a grated trench (location of sample FSA-SF-CT) to a sump and drain pipe (approximately 6-8" diameter) that discharges to the drainage ditch at the southern border of the facility

  - **East Loading/Unloading Area – Observations December, 2013**

    The drainage trench and pipe were generally overgrown and clogged, resulting in standing water at the eastern loading/unloading area. As with the standing water in the tank farm, no discernible odor or visible contamination in the pooled water was observed

- **Seven Out Tank Site – Shallow Trench Outside North Edge of Tank Farm**

  - **Trench Outside North Edge of Tank Farm – Size**

    Approximately >300 feet long

  - **Trench Outside North Edge of Tank Farm – Route of Discharge**

    Sloped to the east and flows into the drain pipe that discharges to the ditch at the southern border of the facility. This shallow trench receives rainwater from the western paved area of the facility and from the southern sloped roof of the Omni Sports Awards building located north of the tank farm.

  - **Trench Outside North Edge of Tank Farm – Observations December, 2013**

    The trench was observed to be dry and contained no discernible visual impacts

- **Seven Out Tank Site – West Loading/Unloading Area**

  - **West Loading/Unloading Area – Size**

    Approximately >5,000 square feet

  - **West Loading/Unloading Area – Route of Discharge**

    Sloped to the east and drains both to the shallow drainage trench outside the north end of the tank farm and to the south where rainwater flows around the south end of the tank farm

  - **West Loading/Unloading Area – Observations December, 2013**

    The paved surface of the west side was observed to be dry and contained no discernible visual impacts

- **Seven Out Tank Site – Soil Outside South Border of Tank Farm**

  - **Soil on South Side – Size**

    - ***Size of area that flows to South into drainage ditch***

      Approximately >24,000 square feet

    - ***Size of area that flows to East Loading/Unloading Area***

      Approximately >2,000 square feet

  - **Soil on South Side – Route of Discharge**

    A majority of the area (>24,000 square feet) sheet flows on a gradient to the south where it enters the drainage ditch at the southern border of the facility. A small area (>2,000 sqare feet) flow to the east and then enters the paved loading/unloading area at the east side of the tank farm where it eventually is transported to the same drainage ditch (samples SO-SW and FSA-SF-SCW were collected from within this smaller section)

  - **Soil on South Side – Observations December, 2013**

    Vegetation in this area has grown significantly since the removal action was completed in 2009, but there were no discernible visual impacts to the soil or the vegetation

- **Off-Site Drainage Path – Drainage Ditch at South Border of Site**

  - **Drainage Ditch – Size**

    Approximately 1,600 feet long. Includes decision units DU-01, DU-02, and DU-03

  - **Drainage Ditch – Route of Discharge**

    The ditch receives stormwater from some sections of Francis Street and overland flow from the immediate area within a range of approximately 200-500 feet.

    - ***Drainage Ditch Route of Discharge – Upstream of Site (decision unit DU01)***

      A small drainage line discharges to an open vegetated ditch, approximately 15 feet wide and 8 feet deep, approximately 250 feet south of Francis Street and 210 feet east of Folks Street. The ditch flows west for 270 feet where it reaches the south border of the Seven Out Tank Site and intersects with DU-02 and continues to DU-03. The net elevation drop along this section was zero, where elevation measurements were taken at water surfaces of the left descending bank (LDB) and remained within a range of 3 inches.

    - ***Drainage Ditch Route of Discharge – Site Drainage (decision unit DU02)***

      The drain pipe from the east side of the Site discharges to a short vegetated ditch where it travels for only 35 feet before intersecting with the drainage ditch at the south border.

    - ***Drainage Ditch Route of Discharge – Downstream of Site (decision unit DU03)***

      The ditch continues west behind the Site for 550 feet and then another 280 feet where it enters a culvert under S Nichols Street. Prior to entering the culvert it is joined by a similarly-sized stormwater drainage ditch from the CSX Rice Yard property. It emerges from the culvert after 290 feet and then proceeds 210 feet northwest on the south border of the Waycross Coca-Cola Bottling Company property along a rip-rapped ditch before intersecting the city drainage canal (between DU-04 and DU-05). The section sampled in DU-03 includes only the 830 foot portion beginning at the south border of the Seven Out Tank Site at DU-02 and ending prior to the intersection with the ditch from the CSX Rice Yard; the total elevation drop along this portion was measured at 3.3 feet (0.4% grade).

  - **Drainage Ditch – Observations December, 2013**

    Water depth in the ditch was observed at depths ranging from 1-6 inches with a noticeable flow downstream but at a minute rate that could not be estimated. Minute flows were also observed from the discharges at the beginning of the ditch and the drain line from the east side of the Site (both flow rates approximately less than 0.5 liters per minute). Vegetation and brush along the ditch was heavy with no distinguishable points where regular pedestrian or vehicle access appeared to occur. No visible impacts to the ditch were observed.

- **Off-Site Drainage Path – Branch of City Drainage Canal**

  - **Canal – Size**

    The branch of the City Drainage Canal that includes decision units DU-04 and DU-05 is approximately 3,800 feet long.

  - **Canal – Route of Discharge**

    - ***Canal Route of Discharge – Upstream of Intersection with Ditch (decision unit DU04)***

      DU-04 is approximately 1,900 feet long beginning at Alpha Street and ending at the intersection with the drainage ditch; this is approximately 3,400 feet downstream of the former MGP Site on Glenmore Avenue which was addressed by Atlanta Gas Light between 1997 and 2002 and included remediation of canal areas traversing through both DU-04 and DU-05. The canal itself is approximately 25 feet wide and 8 feet deep with vegetated banks that are regularly mowed. Within DU-04, it flows through culverts under Ga Street, Ann Street, and Margaret Street.

    - ***Canal Route of Discharge – Intersection between ditch and canal (sample FSA-SD-CO)***

      The ditch at the south border of the Site ultimately discharges into this branch of the City Drainage Canal at a location 250 feet south of Corridor Z (also known as South Georgia Parkway and Highway 82) and 320 feet west of S Nichols Street, directly adjacent to a dual railroad bridge over the canal and at the west side of the Waycross Coca-Cola Bottling Company property. Sample FSA-SD-CO was collected at this intersection.

    - ***Canal Route of Discharge – Downstream of Intersection with Ditch (decision unit DU05)***

      DU-05 is approximately 1,900 feet long beginning at the intersection and ending at Folks Street and throughout this section it flows through culverts under Corridor Z, Elizabeth Street, N Nichols Street, Mary Street, and McDonald Street. The culverts under Corridor Z and Elizabeth Street & Mary Street are each 250 feet long; combined with the other culverts this means that only 1150 feet of the DU-05 section (60%) is accessible. The canal traverses through Mary Street Park for 310 feet of its length.

  - **Canal – Observations December, 2013**

    Water in the canal was observed at widths from 6-10 feet and depths of 6-24 inches. Surface water flow averaged approximately 0.5 feet per second. The canal was primarily vegetated at the banks and contained an estimated sediment mix of approximately 60-70% course to medium sand (0.5-.25mm) and 30-40% very fine sand to silt (3.9-125μm). The canal is easily accessible to pedestrians but no patterns of activity (such as paths or other worn areas) were observed and no impacts were discernible.

ATTACHMENT 1 – SPECIAL POLREP FOR SEVEN OUT TANK SITE

ATTACHMENT 2 – FINAL ASSESSMENT LETTER REPORT FOR FRANCIS STREET SITE